Glenn Research Center, Environmental Programs Manual

Chapter 32 - DRINKING WATER

NOTE: The current version of this Chapter is maintained and approved by the Environmental Management Office (EMO). The revision date for this chapter is May 2002. If you are referencing paper copies, please verify that it is the most current version before use. The current version is maintained on the Glenn Research Center intranet at http://osat-ext.grc.nasa.gov/emo/pub/epm/epm-contents.pdf. Approved by: EMO Chief, Michael Blotzer {mailto: Michael.J.Blotzer@grc.nasa.gov}.

PURPOSE

The quality of the drinking water at GRC is of great importance to the work force. Potable water is supplied to the Cleveland and Plum Brook Station (PBS) facilities from different sources. The facilities have different chemical analysis capabilities, and, consequently, the approaches taken to ensure that quality drinking water differ considerably.

APPLICABILITY

Water quality is determined by comparing the concentration of contaminants in the water with specifications set forth in the Safe Drinking Water Act (SDWA) and its 1986 and 1991 amendments.

POLICY AND RESPONSIBILITY

Cleveland Facility

Drinking water is supplied to the facility by the city of Cleveland and is assumed to meet SDWA specification. Consequently, the only potential sources for introduction of contamination are assumed to be at the facility. The Chemical Sampling and Analysis Team (CSAT) responds to calls and work requests for assessing the quality of drinking water by checking the suspect source for likely contaminants.

The drinking water program at Cleveland consists of periodic testing of all drinking water fountains. Every fountain is tested at least once every 2 years for contaminants and naturally occurring species designated with an asterisk (*) in tables 32-1 plus free chlorine content.

To have a suspect water source tested, submit a work order to the CS&AT for analysis of the water. The CS&AT staff will tag the source (e.g., a water fountain) "Under Testing - Temporarily Out of Service." The water will be collected by a CS&AT technician the following morning and processed immediately.

Results of tests are usually available within 24 hours, and a verbal report will be made to the requester after review by the CS&AT. CS&AT issues a formal report to the requester along with a recommendation for either closing down the source, pending further testing and investigation, or returning it to service. A source returned to service will be tagged with a notice stating the date and results of testing. A source that is closed down will continue to be tested until the condition dissipates (for those conditions best remedied by flushing the system) or until the cause of the contamination is identified and corrected.

The tests performed depend on known or suspected conditions of the source and availability of test methodology. A table of the recommended concentrations of various contaminants and naturally occurring species is given below.

TABLE 32-1. - PRIMARY (p) AND SECONDARY MAXIMUM CONTAMINANT LEVELS FOR PUBLIC WATER SYSTEMS

Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Chromium - total (p)	0.10mg/L

*Coliform - total (p)	<1/100 mL
Color	15 color units
*Copper	1.0mg/L
Corrosively	Non-corrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
*Iron	0.3 mg/L
*Lead	0.015 mg/L
Manganese	0.05 mg/L
Odor	3 Threshold odor number
*pH	6.5-8.5
Silver	0.1 mg/L
Sulfate	250 mg/L
Total Dissolved Solid (TDS)	500 mg/L
*Turbidity (p)	< 5 ntu (nephelometric turbidity units)
*Zinc	5 mg/L

These levels are recommended in the National Primary and Secondary Drinking Water Regulations. The State may establish higher or lower levels that may be appropriate dependent upon local conditions such as unavailability of alternate sources of waters or other compelling factors, provided that public health and welfare are not adversely affected.

There is no established upper limit on free chlorine content. The value that CS&AT considers normal is 1.0 mg/L, which coincides with the level of chlorine added to the potable water by the City of Cleveland. The lower limit is set at 0.2 mg/L by Federal regulation.

Plum Brook Station

PBS receives potable water from the Erie County Water Division. PBS takes a proactive stance to ensure the domestic water distributed to employees meets the Safe Drinking Water Act specifications.

A water sample is collected annually from all active drinking water fountains and analyzed as appropriate for compliance with Primary and Secondary Drinking Water Standards. Each sample is analyzed for free chlorine, chromium (total), copper, iron, lead, odor, pH, and zinc (see table 32-1 for further details). Based on analytical results, the source remains in service or is tagged out-of-service pending further analysis. Corrective action is taken as necessary; that is, lines are flushed and the source repeatedly analyzed until the source is able to maintain compliance with the drinking water standards. If a source is unable to meet the drinking water standards, an alternative water supply is used until the cause of the contamination is identified and corrected.

All drinking fountains have been surveyed to ensure that the fountain does not contain a lead liner. A flushing device has been installed on many of the station fountains to help ensure better water quality. There are no drinking fountains on-site that contain a lead liner.

Six water samples are also collected monthly and analyzed for free and total chlorine. Samples are also sent to an off site laboratory for Total Coliform analysis. Three are from the same locations and the other three are from random locations. Results are sent to the Plum Brook Chemistry Lab. If coliforms are present in the samples, the off site laboratory notifies the Chemistry Lab. The location is tagged out of service and additional samples are collected and sent off site for analysis. This is competed until results are negative for two consecutive days. Once this occurs, the out of service tag is removed and the water supply is put back into service.

Samples are also collected weekly from the Domestic Water Station and the SPF Water Tower and analyzed for free and total chlorine. This is done to determine the amount of chlorine to be injected into the system to maintain the proper chlorine level for disinfections. The injection system is adjusted manually to maintain the proper chlorine level.

Upon notification of employee concern with the water quality at a specified location, the source is tagged out-of-service until appropriate analysis is performed. After the determination that the source is safe for employee consumption the source is so identified and appropriate personnel notified of analytical results.

The environmental personnel ensure water samples are collected on a routine basis, appropriate analysis is performed, corresponding data is recorded, and corrective action is taken as necessary to ensure safe drinking water.

RECORDS

- Chemical Sampling and Analysis Team Analytical Report

Office of Safety and Assurance Technologies (OSAT)
Environmental Management Office Acting Chief: Michael Blotzer
Author and/or Assigned To: Priscilla Mobley {mailto:Priscilla.Mobley@grc.nasa.gov}
Web Curator: Sandra Jacobson {mailto:Sandra.Jacobson@grc.nasa.gov}
Revision Date: May 2002